**BREWER SCIENCE INC.**
**MATERIAL SAFETY DATA SHEET**

This Material Safety Data Sheet has been prepared to comply with the EC Directive, Canadian WHMIS and the OSHA Hazard Communication Standard.

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## SECTION 1: IDENTIFICATION

Product Name: DUV32-6, DUV32-8, DUV32-11, DUV32-16

Manufacturer: Brewer Science, Inc.
2401 Brewer Drive
Rolla, MO 65401

Information Phone Number: (573) 364-0300 Fax: (573) 368-3318
Emergency Phone Number: (800) 255-3924
MSDS Date of Preparation: 9/30/98

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## SECTION 2: HAZARDOUS COMPONENTS

| Component | CAS# | % | Exposure Limits |
|---|---|---|---|
| 1-Methoxy-2-propanol<br>(Propylene glycol monomethyl ether) | 107-98-2 | 30-40 | 100 ppm TLV-TWA<br>150 ppm TLV-STEL |
| Ethyl lactate | 97-64-3 | 50-60 | None Established (PEL/TLV) |
| Cyclohexanone | 108-94-1 | 5-10 | 50 ppm PEL-TWA<br>25 ppm TLV-TWA skin |

**Non-Hazardous Components Present Greater than 1%**
Modified Novolac Resin
Melamine-Formaldehyde Resin

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## SECTION 3: HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

Amber liquid with a solvent odor. Flammable liquid and vapor. May cause eye, skin, and respiratory irritation. May cause headache, dizziness, nausea and other symptoms of central nervous system depression. May be absorbed through the skin to cause symptoms similar to inhalation. Prolonged overexposure may cause liver and kidney damage.

### Potential Health Effects:

Eye: May cause moderate eye irritation with pain and redness.

Skin: May cause redness, irritation and dryness. Prolonged or repeated exposure may cause defatting and dermatitis. Cyclohexanone and 1-Methoxy-2-propanol are absorbed through the skin causing effects similar to those described under inhalation.

Inhalation: Inhalation of vapors, mists, or aerosols may cause nose and throat irritation with the possibility of central nervous system depression. Symptoms of central nervous system depression include headache, dizziness, drowsiness, nausea and unconsciousness.

Ingestion: Swallowing may cause central nervous system depression with headache, nausea, dizziness and unconsciousness; gastrointestinal irritation and injury to the lungs, liver and brain.

Chronic Hazards: Chronic absorption of 1-methoxy-2-propanol may cause slight kidney changes based on studies with laboratory animals. Chronic absorption of cyclohexanone may cause damage to the liver and kidneys based on data from animal studies. Cyclohexanone has been reported to cause adverse reproductive effects in laboratory animals.

Carcinogen Status: This product contains no chemicals at a concentration of greater than or equal to 0.1% that are listed as carcinogens by OSHA, IARC or NTP.

Medical Conditions Aggravated by Exposure: Pre-existing skin, liver and kidney diseases.

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## SECTION 4: FIRST AID MEASURES

Eye: Rinse thoroughly with water for at least 15 minutes, holding the eye lids open to be sure the material is washed out. Get immediate medical attention.

Skin: Remove contaminated clothing. Wash contact area thoroughly with soap and water. Get medical attention if irritation or symptoms of exposure develop. Launder clothing before re-use.

Inhalation: Remove victim to fresh air. Give artificial respiration if needed. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Ingestion: If the victim is conscious and not convulsing, induce vomiting, keeping the head lower than the hips to prevent aspiration. Get immediate medical attention.

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## SECTION 5: FIRE AND EXPLOSION DATA

Flash Point: 38°C ($100^{o}$F) (PMCC) Flammable Limits: LEL: 1.1 vol %
UEL: 12 vol %

Extinguishing Media: Use water fog or spray, universal foam, carbon dioxide or dry chemical.

Special Fire Fighting Procedures: Wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing. Cool fire exposed containers with water.

Unusual Fire Hazards: Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. As with any ether, 1-methoxy-2-propanol may form highly reactive peroxides upon contact with air.

Hazardous Decomposition Products: Oxides of carbon, sulfur and nitrogen, formaldehyde, phenol, ammonia and unknown materials.

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill: Remove all ignition sources such as open flames, spark producing equipment, pilot lights, etc. Wear appropriate protective clothing to prevent eye and skin contact including impervious gloves, safety goggles and respirator if needed. Ventilate area. Cover with and inert absorbent material and collect into an appropriate container for disposal. Report spills and releases as required to appropriate authorities.

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## SECTION 7: HANDLING AND STORAGE

Handling: Avoid breathing vapors, aerosols and mists. Use with adequate ventilation. Avoid contact with the eyes, skin and clothing. Always wear impervious gloves, chemical safety goggles and protective clothing when handling this material. Wash thoroughly after handling. Do not eat, drink or smoke in the work area. Keep product away from heat, sparks, flames and all other sources of ignition. No smoking in storage or use areas. Keep containers closed when not in use.

Storage: Store in a cool, dry, well-ventilated location away from incompatible materials. Keep containers closed when not in use.

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Use with adequate general or local exhaust ventilation to maintain exposure levels below the occupational exposure limits.

Respiratory Protection: If needed, a NIOSH approved respirator with organic vapor cartridges may be used. For higher exposures (greater than 10 times the TLV), a supplied air respirator may be required. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.

Skin Protection: Impervious gloves are recommended. Based on available test data, butyl rubber or Silver Shield gloves are suggested when exposure is likely.

Eye Protection: Chemical safety goggles recommended.

Other Protective Equipment: Impervious clothing is required to prevent skin contact and contamination of personal clothing. An eye wash facility and safety shower should be available in the work area.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Amber liquid with a solvent odor.

pH: Not available
Boiling Point: 114 - 156°C
Vapor Pressure: 10.9 mmHg @ 25°C (1-methoxy-2-propanol)
Vapor Density: Greater than 3
Specific Gravity: 0.92 - 1.1
Melting Point: Not Applicable
Water Solubility: Partially Soluble
Evaporation Rate: Not available

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## SECTION 10: STABILITY AND REACTIVITY

Stability: Stable: X Unstable:

Incompatibility/Conditions to Avoid: Strong oxidizing agents, strong acids, strong alkalis, reducing agents. Keep away from heat, sparks, flames and other sources of ignition.

Hazardous Decomposition Products: Components of this product may decompose over time to produce small amounts (less than 2%) ethanol. Combustion will produce oxides of carbon, sulfur and nitrogen, formaldehyde, phenol, ammonia and unknown materials.

Hazardous Polymerization: May Occur: Will not occur: X

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## SECTION 11: TOXICOLOGICAL INFORMATION

1-Methoxy-2-propanol: Oral rat LD50 - 5660 mg/kg
Inhalation rat LC50 - 10,000 ppm/5 hr
Skin rabbit LD50 - 13 gm/kg
Ethyl Lactate: Oral rat LD50 - >5000 mg/kg
Skin rabbit LD50 - >5000 mg/kg
Cyclohexanone: Oral rat LD50 - 1535 mg/kg
Inhalation rat LC50 - 8000 ppm/4 hr
Modified Novolac resin: No toxicity data available
Melamine-Formaldehyde Resin: Oral rat LD50 - >5000 mg/kg
Skin rabbit LD50 - >2,000 mg/kg

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## SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available for this product at this time.

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## SECTION 13: DISPOSAL INFORMATION

Dispose in accordance with all local, state and federal regulations.

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## SECTION 14: TRANSPORT INFORMATION

DOT Shipping Name: Resin Solution, Flammable ERG #127
DOT Hazard Class: 3, PG III
UN Number: UN1866
DOT Labels Required (49CFR172.101): Flammable Liquid
Hazardous Substance (49CFR172.101): Cyclohexanone (RQ 5000 lbs)
Reportable Quantity: Product - 50,000 lbs
For Product with flashpoint of 100°F or above:
DOT ground transportation: Non hazardous
Proper shipping name: Exempted from hazardous materials (Section 173.150(f))
UN Number: Not applicable
Hazard class/packing group: Not applicable
Labels required: None
IATA Shipping Name: Resin Solution, Flammable
IATA Hazard Class: 3, PG III
UN Number: UN1866
IATA Hazard Labels Required: Flammable Liquid

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## SECTION 15: REGULATORY INFORMATION

**U.S. FEDERAL REGULATIONS:**

CERCLA 103 Reportable Quantity: 50,000 lbs (cyclohexanone - 5,000 lbs)

SARA TITLE III:

Hazard Category for Section 311/312: Acute Health, Chronic Health, Fire Hazard

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None

Section 302 Extremely Hazardous Substances (TPQ): None

EPA Toxic Substances Control Act (TSCA) Status: : This product contains a polymer that is not listed on the EPA TSCA inventory but is exempt from PMN requirements under the polymer exemption at 40CFR 723.250. This product is ,therefore, in compliance with TSCA requirements and there are no restrictions on its use.

**STATE REGULATIONS:**

California Proposition 65: These products contain the following substances known to the State of California to cause cancer and/or reproductive harm: This substance contains residual levels of Formaldehyde (CAS #000050-00-0) which is less than 0.005%.

**INTERNATIONAL REGULATIONS:**

Canadian WHMIS Classification: Class B-3 (Combustible Liquid); Class D, Division 2, Subdivision B (Toxic Material causing other chronic effects)

European Community Labeling Classification: Flammable

European Community Risk and Safety Phrases: R10, S51

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## SECTION 16: OTHER INFORMATION

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|---|---|---|---|
| HMIS Ratings: | Health - 2 | Flammability - 2 | Reactivity - 0 |
| NFPA Ratings: | Health - 2 | Flammability - 2 | Reactivity - 0 |

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This above information is believed to be correct but does not propose to be all inclusive and shall be used only as a guide. Brewer Science shall not be held liable for any damage resulting from handling or from contact with the above product.